BRUHAT BANGALORE MAHANAGARA PALIKE
BYTARAYANPURA DIVISION

Name of Work: Package 2 Consists of 3 Works of Rs.1100.00 Lakhs

1. Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division.
2. Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division.
3.Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 06 Byatarayanapura sub division

TEST REPORTS

FOURTH & PART BILL

TEJUS CONSULTANTS
CONSULTING ENGINEERS AND DESIGNERS
No.58 MIG, 6th Cross, 3rd Main
1st Stage, Basaveshwaranagar
Bangalore-560079
☎ 080 - 23287532
email: tejusconsultants@gmail.com

TEJUS
CONSULTANTS

No.TC/BBMP/BYT-PMC/620/22-23

Date: 08–08 –2022

To
The Executive Engineer
Byatarayanapura Division,
NH-7 Road, Bangalore – 560 092

Dear Sir

Sub: Improvements to roads and drains at Kogilu, Agrahara, Hegdenagar and surrounding area in Ward No 05 and 06 Byatarayanapura sub division Package-02

In reference to the above subject, this is to bring to your kind notice that we have scrutinized the **Fourth and Part bill** submitted by **M/s. Benaka Developers and Projects Pvt Ltd** towards the above said work and arrived at an amount of **Rs.3,51,34,607.20 /-(Rupees Three Crore Fifty One Lakh Thirty Four Thousand Six Hundred Seven and Paise Twenty Only)** the work has been completed satisfactorily.

This is for your kind information.

Thank you and assuring you the best of our Services at all the times

TEJUS CONSULTANTS

For Tejus Consultants
(Nischal M)

BRUHAT BANGALORE MAHANAGARA PALIKE
BYTARAYANPURA DIVISION

Name of Work: Package 2 Consists of 3 Works of Rs.1100.00 Lakhs

1. Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division

TEST REPORTS

FOURTH & PART BILL

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TEJUS
CONSULTANTS

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor:	Benaka Developers & Project Pvt.Ltd.

Type of Material	BC	**Proposed Use**	BC
Sample Location	At plant	**Date of Sampling**	01-07-2022
		Date of Testing	01-07-2022

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	834	84	926	68
16.0	12.5	1326	133	1220	114
12.5	10.0	520	70	442	64
10.0	6.3	466	55	434	63
Total		**3146**	**342**	**3022**	**309**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.87
Elongation Index(%):	10.23
Combined FI+EL (%)	21.10

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4.The material used in the site satisfied the standard of MORTH's 5th revision and hence can be used in the work.

TEJUS CONSULTANTS

Authorised Signatory

ಸಹಾಯಕ ಅಭಿಯಂತರರು
ಬಿ.ಬಿ.ಎಂ.ಪಿ ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿಬಿಎಂಪಿ, ಬಂಗಳೂರು-26

TEJUS
CONSULTANTS

AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	TEJUS CONSULTANTS, BANGALORE		
Contractor	Benaka Developers & Project Pvt.Ltd.		
Proposed Use	BC	**Date of Sampling**	01-07-2022
Sample Location	At plant	**Date of Testing**	01-07-2022

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	397.00	391.00	372.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	307.00	295.00	290.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	97.00	96.00	90.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	24.43	24.55	24.19	
5	Average Aggregate impact value	(%)	24.39			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	04-07-2022
Type of Mix :	Tack coat
Sample I/D :	5
Location	2nd Main, 4th c/s Rd in Shree Balaji Layout

Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location	**Chainage**	**@55**	**@128**	**@200**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.835	0.790	0.780
Final weight of plate after application of tack Coat (c)	Kg	0.858	0.813	0.803
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.251	0.251
Average	Kg/sq.m	0.251		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	04-07-2022
Type of Mix :	BC
Sample I/D :	BC4

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	932	972
2. Weight of Mixture after extraction, g	883	921
3. Weight of Bitumen	49	51
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	50.60	53.00
8. Bitumen content in %	5.43	5.45
9. Average Bitumen content in %	5.44	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	2nd Main, 4th c/s Rd in Shree Balaji Layout	Date of Sampling:	04-07-2022
Type of material & Purpose:	BC	Date of testing:	04-07-2022
		Oven Dry Wt.(gms):	883.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	81	81.0	9.17	90.83	79 - 100
9.50	112	193.0	21.86	78.14	71 - 95
4.75	132	325.0	36.81	63.19	53 - 71
2.360	111	436.0	49.38	50.62	42 - 58
1.180	112	548.0	62.06	37.94	34 - 48
0.600	65	613.0	69.42	30.58	26 - 38
0.300	76	689.0	78.03	21.97	18 - 28
0.150	65	754.0	85.39	14.61	12 - 20
0.075	70	824.0	93.32	6.68	4 - 10
Pan	59.0				
Total	883.0				

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TEJUS CONSULTANTS
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TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS, BANGALORE
Contractor	Benaka Developers & Project Pvt.Ltd.

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	DBM	**Date of Sampling**	04-07-2022
Sample Location	At plant	**Date of Testing**	04-07-2022

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	394.00	375.00	388.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	297.00	285.00	288.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	97.00	90.00	100.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	24.62	24.00	25.77	
5	Average Aggregate impact value	(%)	24.80			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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TEJUS CONSULTANTS

Consultant's Representative

Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS, BANGALORE
Contractor	Benaka Developers & Project Pvt.Ltd.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material		DBM		**Proposed Use**	**DBM**
Sample Location		At plant		**Date of Sampling**	**04-07-2022**
				Date of Testing	**04-07-2022**
Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	7389	676	7034	340
31.5	25.0	4130	250	3625	272
25.0	20.0	2456	250	1086	231
20.0	16.0	1545	320	923	253
16.0	12.5	600	110	451	188
12.5	10.0	490	63	267	79
10.0	6.3	120	72	62	54
Total		**16730**	**1741**	**13448**	**1417**

Results

Flakiness Index(%):	10.41
Elongation Index(%):	10.54
Combined FI+EL (%)	20.94

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TEJUS CONSULTANTS

Consultant's Representative

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	05-07-2022
Type of Mix :	Tack coat
Sample I/D :	7
Location	2nd Main, 7th c/s Rd in Shree Balaji Layout

Determination	Unit	Test No		
		1	2	3
Location	**Chainage**	**@48**	**@97**	**@126**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.756	0.765	0.812
Final weight of plate after application of tack Coat (c)	Kg	0.779	0.788	0.835
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.252	0.252
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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TEJUS CONSULTANTS

Authorised Signatory

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	05-07-2022
Type of Mix :	BC
Sample I/D :	BC5

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	921	981
2. Weight of Mixture after extraction, g	872	930
3. Weight of Bitumen	49	51
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	50.60	53.00
8. Bitumen content in %	5.49	5.40
9. Average Bitumen content in %	5.45	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	2nd Main, 7th c/s Rd in Shree Balaji Layout	Date of Sampling:	05-07-2022
Type of material & Purpose:	BC	Date of testing:	05-07-2022
		Oven Dry Wt.(gms):	872.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	87	87.0	9.98	90.02	79 - 100
9.50	105	192.0	22.02	77.98	71 - 95
4.75	128	320.0	36.70	63.30	53 - 71
2.360	108	428.0	49.08	50.92	42 - 58
1.180	104	532.0	61.01	38.99	34 - 48
0.600	74	606.0	69.50	30.50	26 - 38
0.300	81	687.0	78.78	21.22	18 - 28
0.150	65	752.0	86.24	13.76	12 - 20
0.075	72	824.0	94.50	5.50	4 - 10
Pan	48.0				
Total	872.0				

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ಬಿ.ಬಿ.ಎಂ.ಪಿ ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-24

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BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE BITUMINOUS MACADAM MIX

Name of Work	:	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, BANGALORE
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	06-07-2022
Type of Mix	:	DBM
Sample I/D	:	DBM-1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	881	928
2. Weight of Mixture after extraction, g	843	888
3. Weight of Bitumen	38	40
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.00	4.00
6. Weight of fines, g	2.00	2.00
7. Weight of Bitumen & fines	40.00	42.00
8. Bitumen content in %	4.54	4.53
9. Average Bitumen content in %	4.53	
10. Minimum Bitumen content in %	4.50	

GRADATION FOR DBM AFTER EXTRACTION

(As per MORT&H 500-10,Grading-2)

Sample Location:	Tirumenahalli Main Road (From Gvt School to Agrahara Main Road)	**Date of Sampling:**	06-07-2022
		Date of testing:	06-07-2022
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	843

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0.0	0.0	0.00	100.00	100.00
26.50	44.0	44.0	5.22	94.78	90-100
19.00	126.0	170.0	20.17	79.83	71-95
13.20	121.0	291.0	34.52	65.48	56-80
4.750	155.0	446.0	52.91	47.09	38-54
2.360	102.0	548.0	65.01	34.99	28-42
0.300	182.0	730.0	86.60	13.40	7-21
0.075	62.0	792.0	93.95	6.05	2-8
Pan	51.0	843.0			
Total	843.0				

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TEJUS CONSULTANTS

Consultant's Representative

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ಬಿ.ಬಿ.ಎಂ.ಪಿ ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ

ಸಹಾಯಕ ಆಯುಕ್ತರು ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-26

TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT				
Name of Work :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division			
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE			
Consultant :	TEJUS CONSULTANTS, BANGALORE			
Contractor :	Benaka Developers & Project Pvt.Ltd.			
Date of Testing :	06-07-2022			
Type of Mix :	Tack coat			
Sample I/D :	1			
Location :	Tirumenahalli Main Road (From Gvt School to Agrahara Main Road)			
Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location	**Chainage**	**@126**	**@302**	**@614**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.762	0.764	0.800
Final weight of plate after application of tack Coat (c)	Kg	0.785	0.787	0.823
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.253	0.254	0.256
Average	Kg/sq.m	0.254		
Specified Limit	Kg/sq.m	0.250 Kg/sq.m		

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ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-24.

TEJUS
CONSULTANTS

BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE BITUMINOUS MACADAM MIX

Name of Work	:	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, BANGALORE
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	07-07-2022
Type of Mix	:	DBM
Sample I/D	:	DBM-2

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	867	964
2. Weight of Mixture after extraction, g	830	922
3. Weight of Bitumen	37	42
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.00	4.00
6. Weight of fines, g	2.00	2.00
7. Weight of Bitumen & fines	39.00	44.00
8. Bitumen content in %	4.50	4.56
9. Average Bitumen content in %	4.53	
10. Minimum Bitumen content in %	4.50	

GRADATION FOR DBM AFTER EXTRACTION

(As per MORT&H 500-10,Grading-2)

Sample Location:	Tirumenahalli Main Road (From Gvt School to Agrahara Main Road)	**Date of Sampling:**	07-07-2022
		Date of testing:	07-07-2022
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	830

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0.0	0.0	0.00	100.00	100.00
26.50	43.0	43.0	5.18	94.82	90-100
19.00	121.0	164.0	19.76	80.24	71-95
13.20	116.0	280.0	33.73	66.27	56-80
4.750	167.0	447.0	53.86	46.14	38-54
2.360	97.0	544.0	65.54	34.46	28-42
0.300	143.0	687.0	82.77	17.23	7-21
0.075	93.0	780.0	93.98	6.02	2-8
Pan	50.0	830.0			
Total	830.0				

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4. The material used in the site satisfied the standard of MORTH's 5th revision and hence can be used in the work.

TEJUS CONSULTANTS

Consultant's Representative

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ಬಿ.ಬಿ.ಎಂ.ಪಿ ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರ
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿಬಿಎಂಪಿ, ಬಾಗಲೂರು-77

TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT				
Name of Work :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division			
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE			
Consultant :	TEJUS CONSULTANTS, BANGALORE			
Contractor :	Benaka Developers & Project Pvt.Ltd.			
Date of Testing :	07-07-2022			
Type of Mix :	Tack coat			
Sample I/D :	2			
Location :	Tirumenahalli Main Road (From Gvt School to Agrahara Main Road)			
Determination	**Unit**	**Test No**		
		1	**2**	**3**
Loacation	**Chainage**	**@732**	**@905**	**@1313**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.794	0.762	0.824
Final weight of plate after application of tack Coat (c)	Kg	0.817	0.785	0.847
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.253	0.254	0.251
Average	Kg/sq.m	0.253		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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Consultant's Representative

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CONSULTANTS

AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	TEJUS CONSULTANTS, BANGALORE		
Contractor	Benaka Developers & Project Pvt.Ltd.		
Proposed Use	BC	**Date of Sampling**	08-07-2022
Sample Location	At plant	**Date of Testing**	08-07-2022

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	390.00	356.00	347.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	291.00	268.00	261.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	99.00	88.00	86.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	25.38	24.72	24.78	
5	Average Aggregate impact value	(%)	24.96			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	11-07-2022
Type of Mix :	Tack coat
Sample I/D :	6
Location	Chamundi Layout Cross Roads

Determination	Unit	Test No		
		1	2	3
Location	Chainage	@3rd c/s	@4th c/s	@5th c/s Rd
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.795	0.748	0.774
Final weight of plate after application of tack Coat (c)	Kg	0.818	0.771	0.797
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.254	0.251	0.253
Average	Kg/sq.m	0.253		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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TEJUS
CONSULTANTS

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	11-07-2022
Type of Mix :	BC
Sample I/D :	BC6

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	941	918
2. Weight of Mixture after extraction, g	891	870
3. Weight of Bitumen	50	48
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	51.60	50.00
8. Bitumen content in %	5.48	5.45
9. Average Bitumen content in %	5.47	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	Chamundi Layout Cross Roads	Date of Sampling:	11-07-2022
Type of material & Purpose:	BC	Date of testing:	11-07-2022
		Oven Dry Wt.(gms):	891.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	79	79.0	8.87	91.13	79 - 100
9.50	115	194.0	21.77	78.23	71 - 95
4.75	126	320.0	35.91	64.09	53 - 71
2.360	115	435.0	48.82	51.18	42 - 58
1.180	105	540.0	60.61	39.39	34 - 48
0.600	79	619.0	69.47	30.53	26 - 38
0.300	82	701.0	78.68	21.32	18 - 28
0.150	64	765.0	85.86	14.14	12 - 20
0.075	73	838.0	94.05	5.95	4 - 10
Pan	53.0				
Total	891.0				

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AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	TEJUS CONSULTANTS, BANGALORE		
Contractor	Benaka Developers & Project Pvt.Ltd.		
Proposed Use	BC	Date of Sampling	12-07-2022
Sample Location	At plant	Date of Testing	12-07-2022

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	392.00	362.00	365.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	303.00	278.00	282.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	89.00	84.00	83.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	22.70	23.20	22.74	
5	Average Aggregate impact value	(%)	22.88			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor:	Benaka Developers & Project Pvt.Ltd.

Type of Material	BC	**Proposed Use**	BC
Sample Location	At plant	**Date of Sampling**	08-07-2022
		Date of Testing	08-07-2022

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	825	75	924	76
16.0	12.5	1334	125	1234	118
12.5	10.0	524	76	448	56
10.0	6.3	460	52	432	65
Total		**3143**	**328**	**3038**	**315**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.44	
Elongation Index(%):	10.37	
Combined FI+EL (%)	20.80	

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
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ಬಿ.ಬಿ.ಎಂ.ಪಿ, ಬೆಂಗಳೂರು-24

TEJUS
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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor:	Benaka Developers & Project Pvt.Ltd.

Type of Material	BC	**Proposed Use**	BC
Sample Location	At plant	**Date of Sampling**	12-07-2022
		Date of Testing	12-07-2022

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	822	77	925	70
16.0	12.5	1334	134	1232	115
12.5	10.0	526	70	445	54
10.0	6.3	460	52	432	65
Total		**3142**	**333**	**3034**	**304**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.60
Elongation Index(%):	10.02
Combined FI+EL (%)	20.62

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ, ಬೆಂಗಳೂರು-24

TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT				
Name of Work :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division			
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE			
Consultant :	TEJUS CONSULTANTS, BANGALORE			
Contractor :	Benaka Developers & Project Pvt.Ltd.			
Date of Testing :	13-07-2022			
Type of Mix :	Tack coat			
Sample I/D :	1			
Location	Tirumenahalli Main Road (From Gvt School to Agrahara Main Road)			
Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location	**Chainage**	**@66**	**@195**	**@382**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.778	0.767	0.794
Final weight of plate after application of tack Coat (c)	Kg	0.801	0.790	0.817
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.251	0.251
Average	Kg/sq.m	0.251		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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TEJUS
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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	13-07-2022
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	952	920
2. Weight of Mixture after extraction, g	902	872
3. Weight of Bitumen	50	48
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	51.60	50.00
8. Bitumen content in %	5.42	5.43
9. Average Bitumen content in %	5.43	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

Sample Location:	Tirumenahalli Main Road (From Gvt School to Agrahara Main Road)	Date of Sampling:	13-07-2022
Type of material & Purpose:	BC	Date of testing:	13-07-2022
		Oven Dry Wt.(gms)	902.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	84	84.0	9.31	90.69	79 - 100
9.50	126	210.0	23.28	76.72	71 - 95
4.75	130	340.0	37.69	62.31	53 - 71
2.360	106	446.0	49.45	50.55	42 - 58
1.180	102	548.0	60.75	39.25	34 - 48
0.600	82	630.0	69.84	30.16	26 - 38
0.300	85	715.0	79.27	20.73	18 - 28
0.150	64	779.0	86.36	13.64	12 - 20
0.075	75	854.0	94.68	5.32	4 - 10
Pan	48.0				
Total	902.0				

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರ
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ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-26

TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT				
Name of Work :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division			
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE			
Consultant :	TEJUS CONSULTANTS, BANGALORE			
Contractor :	Benaka Developers & Project Pvt.Ltd.			
Date of Testing :	14-07-2022			
Type of Mix :	Tack coat			
Sample I/D :	2			
Location	Tirumenahalli Main Road (From Gvt School to Agrahara Main Road)			
Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location	**Chainage**	**@492**	**@608**	**@810**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.752	0.784	0.804
Final weight of plate after application of tack Coat (c)	Kg	0.775	0.807	0.827
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.252	0.252
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಬೆಂಗಳೂರು-26

TEJUS
CONSULTANTS

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	14-07-2022
Type of Mix :	BC
Sample I/D :	BC2

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	960	966
2. Weight of Mixture after extraction, g	909	915
3. Weight of Bitumen	51	51
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	52.60	53.00
8. Bitumen content in %	5.48	5.49
9. Average Bitumen content in %	5.48	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	Tirumenahalli Main Road (From Gvt School to Agrahara Main Road)	Date of Sampling:	14-07-2022
Type of material & Purpose:	BC	Date of testing:	14-07-2022
		Oven Dry Wt.(gms):	909.0

IS Sieve size in mm	Weight retained	Cummulative weight retained	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	80	80.0	8.80	91.20	79 - 100
9.50	104	184.0	20.24	79.76	71 - 95
4.75	135	319.0	35.09	64.91	53 - 71
2.360	126	445.0	48.95	51.05	42 - 58
1.180	103	548.0	60.29	39.71	34 - 48
0.600	74	622.0	68.43	31.57	26 - 38
0.300	82	704.0	77.45	22.55	18 - 28
0.150	72	776.0	85.37	14.63	12 - 20
0.075	73	849.0	93.40	6.60	4 - 10
Pan	60.0				
Total	909.0				

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TEJUS CONSULTANTS
Authorised Signatory

ಸಹಾಯಕ ಅಭಿಯಂತರರು
ಬಿ.ಬಿ.ಎಂ.ಪಿ ಬ್ಯಾಟರಾಯನಪುರ ಉಪವಿಭಾಗ

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
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ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-26

TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	15-07-2022
Type of Mix :	Tack coat
Sample I/D :	3
Location	Tirumenahalli Main Road (From Gvt School to Agrahara Main Road)

Determination	Unit	Test No		
		1	2	3
Location	**Chainage**	**@912**	**@1104**	**@1316**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.791	0.784	0.824
Final weight of plate after application of tack Coat (c)	Kg	0.814	0.807	0.847
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.253	0.252	0.250
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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TEJUS CONSULTANTS

Authorised Signatory

TEJUS
CONSULTANTS

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	15-07-2022
Type of Mix :	BC
Sample I/D :	BC3

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	936	972
2. Weight of Mixture after extraction, g	887	921
3. Weight of Bitumen	49	51
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	50.60	53.00
8. Bitumen content in %	5.41	5.45
9. Average Bitumen content in %	5.43	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	Tirumenahalli Main Road (From Gvt School to Agrahara Main Road)	Date of Sampling:	15-07-2022
Type of material & Purpose:	BC	Date of testing:	15-07-2022
		Oven Dry Wt.(gms):	887.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	82	82.0	9.24	90.76	79 - 100
9.50	110	192.0	21.65	78.35	71 - 95
4.75	130	322.0	36.30	63.70	53 - 71
2.360	108	430.0	48.48	51.52	42 - 58
1.180	105	535.0	60.32	39.68	34 - 48
0.600	80	615.0	69.33	30.67	26 - 38
0.300	74	689.0	77.68	22.32	18 - 28
0.150	61	750.0	84.55	15.45	12 - 20
0.075	70	820.0	92.45	7.55	4 - 10
Pan	67.0				
Total	887.0				

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ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-26

BRUHAT BANGALORE MAHANAGARA PALIKE
BYTARAYANPURA DIVISION

Name of Work: Package 2 Consists of 3 Works of Rs.1100.00 Lakhs

2. Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division.

TEST REPORTS

FOURTH & PART BILL

TEJUS CONSULTANTS
CONSULTING ENGINEERS AND DESIGNERS
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Bangalore-560079
☎ 080 - 23287532
email: tejusconsultants@gmail.com

Project	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS, BANGALORE
Contractor	Benaka Developers & Project Pvt.Ltd.

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	DBM	**Date of Sampling**	**20-06-2022**
Sample Location	At plant	**Date of Testing**	**20-06-2022**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	393.00	376.00	369.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	298.00	286.00	277.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	95.00	90.00	92.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	24.17	23.94	24.93	
5	Average Aggregate impact value	(%)	24.35			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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TEJUS CONSULTANTS

Consultant's Representative

TEJUS
CONSULTANTS

Project	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS, BANGALORE
Contractor	Benaka Developers & Project Pvt.Ltd.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material		DBM		Proposed Use	DBM
Sample Location		At plant		Date of Sampling	20-06-2022
				Date of Testing	20-06-2022
Size of aggregate		Flakiness Index		Elongation Index	
Passing through IS sieve, mm	Retained on IS sieve, mm	Total wt. of aggregate retained on sieves (A) gms.	Wt. of aggregate passing from Flakiness gauge (B) gms	Wt. of aggregate retained on Flakiness gauge (C) gms	Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	7389	676	7036	342
31.5	25.0	4130	246	3621	269
25.0	20.0	2456	252	1084	232
20.0	16.0	1545	320	923	253
16.0	12.5	600	110	451	188
12.5	10.0	490	63	267	79
10.0	6.3	120	72	62	54
Total		16730	1739	13444	1417

Results

Flakiness Index(%):	10.39	
Elongation Index(%):	10.54	
Combined FI+EL (%)	20.93	

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Consultant's Representative

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ಸಹಾಯಕ ಕಾರ್ಯನಿರ್ವಾಹಕ ಅಭಿಯಂತರರು
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ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-26

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor:	Benaka Developers & Project Pvt.Ltd.

Type of Material	BC	**Proposed Use**	BC
Sample Location	At plant	**Date of Sampling**	21-06-2022
		Date of Testing	21-06-2022

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	826	80	922	74
16.0	12.5	1336	134	1234	116
12.5	10.0	527	75	447	55
10.0	6.3	460	50	433	62
Total		**3149**	**339**	**3036**	**307**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.77
Elongation Index(%):	10.11
Combined FI+EL (%)	20.88

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Authorised Signatory

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TEJUS
CONSULTANTS

AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Project	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	TEJUS CONSULTANTS, BANGALORE		
Contractor	Benaka Developers & Project Pvt.Ltd.		
Proposed Use	BC	**Date of Sampling**	21-06-2022
Sample Location	At plant	**Date of Testing**	21-06-2022

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	389.00	353.00	357.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	292.00	263.00	263.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	97.00	90.00	94.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	24.94	25.50	26.33	
5	Average Aggregate impact value	(%)	25.59			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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TEJUS CONSULTANTS

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CONSULTANTS

BITUMEN CONTENT AND GRADATION DETERMINATION OF
DENSE BITUMINOUS MACADAM MIX

Name of Work	:	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, BANGALORE
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	23-06-2022
Type of Mix	:	DBM
Sample I/D	:	DBM-I

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	881	929
2. Weight of Mixture after extraction, g	843	889
3. Weight of Bitumen	38	40
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.00	4.00
6. Weight of fines, g	2.00	2.00
7. Weight of Bitumen & fines	40.00	42.00
8. Bitumen content in %	4.54	4.52
9. Average Bitumen content in %	4.53	
10. Minimum Bitumen content in %	4.50	

GRADATION FOR DBM AFTER EXTRACTION
(As per MORT&H 500-10,Grading-2)

Sample Location:	Balajikrupa Layout Main Road	Date of Sampling:	23-06-2022
		Date of testing:	23-06-2022
Type of material & Purpose:	DBM	Oven Dry Wt.(gms):	843

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0.0	0.0	0.00	100.00	100.00
26.50	41.0	41.0	4.86	95.14	90-100
19.00	126.0	167.0	19.81	80.19	71-95
13.20	123.0	290.0	34.40	65.60	56-80
4.750	155.0	445.0	52.79	47.21	38-54
2.360	102.0	547.0	64.89	35.11	28-42
0.300	186.0	733.0	86.95	13.05	7-21
0.075	65.0	798.0	94.66	5.34	2-8
Pan	45.0	843.0			
Total	843.0				

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TEJUS CONSULTANTS

Consultant's Representative

TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	23-06-2022
Type of Mix :	Tack coat
Sample I/D :	1
Location :	Balajikrupa Layout Main Road

Determination	Unit	Test No		
		1	2	3
Location	**Chainage**	**For Profile Correction**	**For Profile Correction**	**For Profile Correction**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.762	0.765	0.804
Final weight of plate after application of tack Coat (c)	Kg	0.785	0.788	0.827
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.253	0.253	0.253
Average	Kg/sq.m	0.253		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-26

TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	24-06-2022
Type of Mix :	Tack coat
Sample I/D :	1
Location	Balajikrupa Layout Main Road

Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location	**Chainage**	**@68**	**@97**	**@145**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.836	0.790	0.780
Final weight of plate after application of tack Coat (c)	Kg	0.859	0.813	0.803
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.254	0.253	0.253
Average	Kg/sq.m	0.254		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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TEJUS CONSULTANTS

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CONSULTANTS

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	24-06-2022
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	936	967
2. Weight of Mixture after extraction, g	887	916
3. Weight of Bitumen	49	51
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	50.60	53.00
8. Bitumen content in %	5.41	5.48
9. Average Bitumen content in %	5.44	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	Balajikrupa Layout Main Road	Date of Sampling:	24-06-2022
Type of material & Purpose:	BC	Date of testing:	24-06-2022
		Oven Dry Wt.(gms):	887.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	86	86.0	9.70	90.30	79 - 100
9.50	114	200.0	22.55	77.45	71 - 95
4.75	126	326.0	36.75	63.25	53 - 71
2.360	118	444.0	50.06	49.94	42 - 58
1.180	120	564.0	63.59	36.41	34 - 48
0.600	65	629.0	70.91	29.09	26 - 38
0.300	79	708.0	79.82	20.18	18 - 28
0.150	62	770.0	86.81	13.19	12 - 20
0.075	69	839.0	94.59	5.41	4 - 10
Pan	48.0				
Total	887.0				

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TEJUS
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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	25-06-2022
Type of Mix :	Tack coat
Sample I/D :	2
Location	Balajikrupa Layout Main Road

Determination	Unit	Test No		
		1	2	3
Location	Chainage	@196	@273	@314
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.756	0.766	0.812
Final weight of plate after application of tack Coat (c)	Kg	0.779	0.789	0.835
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.252	0.252
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-24

TEJUS
CONSULTANTS

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	25-06-2022
Type of Mix :	BC
Sample I/D :	BC2

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	922	955
2. Weight of Mixture after extraction, g	873	905
3. Weight of Bitumen	49	50
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	50.60	52.00
8. Bitumen content in %	5.49	5.45
9. Average Bitumen content in %	5.47	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	Balajikrupa Layout Main Road	Date of Sampling:	25-06-2022
Type of material & Purpose:	BC	Date of testing:	25-06-2022
		Oven Dry Wt.(gms):	873.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	84	84.0	9.62	90.38	79 - 100
9.50	104	188.0	21.53	78.47	71 - 95
4.75	135	323.0	37.00	63.00	53 - 71
2.360	108	431.0	49.37	50.63	42 - 58
1.180	100	531.0	60.82	39.18	34 - 48
0.600	76	607.0	69.53	30.47	26 - 38
0.300	81	688.0	78.81	21.19	18 - 28
0.150	64	752.0	86.14	13.86	12 - 20
0.075	70	822.0	94.16	5.84	4 - 10
Pan	51.0				
Total	873.0				

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ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-26

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	30-06-2022
Type of Mix :	BC
Sample I/D :	BC3

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	970	918
2. Weight of Mixture after extraction, g	919	870
3. Weight of Bitumen	51	48
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	52.60	50.00
8. Bitumen content in %	5.42	5.45
9. Average Bitumen content in %	**5.43**	
10. Minimum Bitumen content in %	**5.40**	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	Emera Land 1st cross Road	Date of Sampling:	30-06-2022
Type of material & Purpose:	BC	Date of testing:	30-06-2022
		Oven Dry Wt.(gms):	919.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	90	90.0	9.79	90.21	79 - 100
9.50	119	209.0	22.74	77.26	71 - 95
4.75	130	339.0	36.89	63.11	53 - 71
2.360	115	454.0	49.40	50.60	42 - 58
1.180	110	564.0	61.37	38.63	34 - 48
0.600	85	649.0	70.62	29.38	26 - 38
0.300	82	731.0	79.54	20.46	18 - 28
0.150	64	795.0	86.51	13.49	12 - 20
0.075	73	868.0	94.45	5.55	4 - 10
Pan	51.0				
Total	919.0				

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ಸಹಾಯಕ ಕಾರ್ಯನಿರ್ವಾಹಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-26

TEJUS
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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	30-06-2022
Type of Mix :	Tack coat
Sample I/D :	3
Location	Emera Land 1st cross Road

Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location	**Chainage**	**@75**	**@169**	**@205**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.814	0.796	0.782
Final weight of plate after application of tack Coat (c)	Kg	0.837	0.819	0.805
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.253	0.254	0.253
Average	Kg/sq.m	0.254		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor:	Benaka Developers & Project Pvt.Ltd.

Type of Material	BC	**Proposed Use**	BC
Sample Location	At plant	**Date of Sampling**	01-07-2022
		Date of Testing	01-07-2022

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	800	81	925	72
16.0	12.5	1339	132	1236	114
12.5	10.0	522	72	441	55
10.0	6.3	463	54	433	66
Total		**3124**	**339**	**3035**	**307**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.85
Elongation Index(%):	10.12
Combined FI+EL (%)	20.97

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
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ಬಿಬಿಎಂಪಿ, ಬೆಂಗಳೂರು-24

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AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Project	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	TEJUS CONSULTANTS, BANGALORE		
Contractor	Benaka Developers & Project Pvt.Ltd.		
Proposed Use	BC	Date of Sampling	01-07-2022
Sample Location	At plant	Date of Testing	01-07-2022

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	392.00	362.00	366.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	304.00	280.00	283.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	88.00	82.00	83.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	22.45	22.65	22.68	
5	Average Aggregate impact value	(%)	22.59			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	03-07-2022
Type of Mix :	Tack coat
Sample I/D :	5
Location	Agrahara Mn rd to 3rd Cross Manjunatha Layout

Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location	**Chainage**	**@35**	**@79**	**@112**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.796	0.814	0.799
Final weight of plate after application of tack Coat (c)	Kg	0.819	0.837	0.822
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.252	0.252
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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TEJUS
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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	03-07-2022
Type of Mix :	Tack coat
Sample I/D :	4
Location	2nd Main Rd Kuvempu layout

Determination	Unit	Test No		
		1	2	3
Location	**Chainage**	**@84**	**@186**	**@248**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.767	0.792	0.796
Final weight of plate after application of tack Coat (c)	Kg	0.790	0.815	0.819
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.253	0.254	0.253
Average	Kg/sq.m	0.254		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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TEJUS
CONSULTANTS

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	03-07-2022
Type of Mix :	BC
Sample I/D :	BC5

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	972	945
2. Weight of Mixture after extraction, g	921	896
3. Weight of Bitumen	51	49
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	52.60	51.00
8. Bitumen content in %	5.41	5.40
9. Average Bitumen content in %	5.40	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	Agrahara Mn rd to 3rd Cross Manjunatha Layout	Date of Sampling:	03-07-2022
Type of material & Purpose:	BC	Date of testing:	03-07-2022
		Oven Dry Wt.(gms):	921.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	86	86.0	9.34	90.66	79 - 100
9.50	115	201.0	21.82	78.18	71 - 95
4.75	120	321.0	34.85	65.15	53 - 71
2.360	120	441.0	47.88	52.12	42 - 58
1.180	106	547.0	59.39	40.61	34 - 48
0.600	90	637.0	69.16	30.84	26 - 38
0.300	75	712.0	77.31	22.69	18 - 28
0.150	72	784.0	85.12	14.88	12 - 20
0.075	66	850.0	92.29	7.71	4 - 10
Pan	71.0				
Total	921.0				

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	03-07-2022
Type of Mix :	BC
Sample I/D :	BC4

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	934	956
2. Weight of Mixture after extraction, g	885	906
3. Weight of Bitumen	49	50
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	50.60	52.00
8. Bitumen content in %	5.42	5.44
9. Average Bitumen content in %	5.43	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	2nd Main Rd Kuvempu layout	Date of Sampling:	03-07-2022
Type of material & Purpose:	BC	Date of testing:	03-07-2022
		Oven Dry Wt.(gms):	885.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	96	96.0	10.85	89.15	79 - 100
9.50	114	210.0	23.73	76.27	71 - 95
4.75	130	340.0	38.42	61.58	53 - 71
2.360	105	445.0	50.28	49.72	42 - 58
1.180	108	553.0	62.49	37.51	34 - 48
0.600	76	629.0	71.07	28.93	26 - 38
0.300	76	705.0	79.66	20.34	18 - 28
0.150	68	773.0	87.34	12.66	12 - 20
0.075	60	833.0	94.12	5.88	4 - 10
Pan	52.0				
Total	885.0				

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	04-07-2022
Type of Mix :	Tack coat
Sample I/D :	6
Location	Balaji badavane c/s Roads

Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location	**Chainage**	**@29**	**@52 in 4th A Balaji**	**@73 in 4th B Balaji**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.823	0.736	0.772
Final weight of plate after application of tack Coat (c)	Kg	0.846	0.759	0.795
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.253	0.254	0.253
Average	Kg/sq.m	0.254		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	04-07-2022
Type of Mix :	BC
Sample I/D :	BC6

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	950	901
2. Weight of Mixture after extraction, g	900	854
3. Weight of Bitumen	50	47
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	51.60	49.00
8. Bitumen content in %	5.43	5.44
9. Average Bitumen content in %	5.43	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	Balaji badavane c/s Roads	Date of Sampling:	04-07-2022
Type of material & Purpose:	BC	Date of testing:	04-07-2022
		Oven Dry Wt.(gms):	900.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	86	86.0	9.56	90.44	79 - 100
9.50	115	201.0	22.33	77.67	71 - 95
4.75	140	341.0	37.89	62.11	53 - 71
2.360	116	457.0	50.78	49.22	42 - 58
1.180	104	561.0	62.33	37.67	34 - 48
0.600	72	633.0	70.33	29.67	26 - 38
0.300	76	709.0	78.78	21.22	18 - 28
0.150	64	773.0	85.89	14.11	12 - 20
0.075	66	839.0	93.22	6.78	4 - 10
Pan	61.0				
Total	900.0				

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AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Project	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	TEJUS CONSULTANTS, BANGALORE		
Contractor	Benaka Developers & Project Pvt.Ltd.		
Proposed Use	BC	**Date of Sampling**	12-07-2022
Sample Location	At plant	**Date of Testing**	12-07-2022

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	351.00	376.00	375.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	269.00	289.00	274.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	82.00	87.00	101.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	23.36	23.14	26.93	
5	Average Aggregate impact value	(%)	24.48			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor:	Benaka Developers & Project Pvt.Ltd.

Type of Material	BC	**Proposed Use**	BC
Sample Location	At plant	**Date of Sampling**	12-07-2022
		Date of Testing	12-07-2022

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	826	79	926	72
16.0	12.5	1336	138	1234	119
12.5	10.0	524	72	448	54
10.0	6.3	460	52	432	65
Total		**3146**	**341**	**3040**	**310**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.84
Elongation Index(%):	10.20
Combined FI+EL (%)	21.04

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ಸಹಾಯಕ ಅಧಿಯಂತರರು
ಬಿ.ಬಿ.ಎಂ.ಪಿ ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಧಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-24